Patent claims

1. Device for the variable actuation of the charge-cycle valves in reciprocating piston engines consisting of a housing (G), a cam (N) mounted in the housing (G) in a turning joint (ng) and whose rotating motion is derived from the crankshaft, an output element (A), which is mounted in the housing (G) in a turning joint (ag) and which transmits the motion to a charge-cycle valve (V), and an intermediate element (Z), which is mounted in the housing (G) in a turning joint (zg) and which is connected with the cam (N) through an output element (A) and a cam joint (zn, za), wherein the cam joint (za) between the intermediate element (Z) and the output element (A) comprises, at the intermediate element (Z), a section (Kzar) that forms a stop notch and a control section (Kzs). The section (Kzar) that forms a stop notch is formed by a circular arc, whose center is identical with the center of rotation of the turning joint (zg) between the intermediate element (Z) and the housing (G), and is characterized in that the position of the cam joint (za) can be changed by means of a shift (Vzg, Vag) in the position of the cam joint (zg) in relation to the turning joint (ag), wherein this change in the position of the cam joint (za) in the area of the valve stop notch, reflects a shift (Vza) of the cam joint (za) along the section (Kzar) of the contour of the intermediate element (Z) that forms the stop notch.

2. Device according to claim 1, characterized in that the cam joint (za) between the intermediate element (Z) and the output element (A) is formed by a rotation body (RA) mounted on the output element (A) and by a curve (Kzar1, Kzas1) on the intermediate element (Z).

3. Device according to claims 1 and 2, characterized in that, in order to change the valve lift curve, the position of the turning joint (zg) between the intermediate element (Z) and the housing (G) can be changed along a circular arc (KbVZ), whose circle middle point during the valve stop is identical to the center of rotation of the rotation body (RA) mounted on the output element (A).

4. Device according to claims 1 and 2, characterized in that in order to change the valve lift curve, the position of the turning joint (ag) between the output element (A) and the housing (G) can be changed along a circular arc (KbVA1), whose circle middle point is identical to the center of rotation of the turning joint (zg) between the intermediate element (Z) and the housing (G).

5. Device according to claims 1 to 4, characterized in that the intermediate element (Z) is essentially designed as a toggle lever.

6. Device according to claims 1 to 4, characterized in that the intermediate element (Z) is essentially designed as a cam follower.

7. Device for the variable actuation of the charge-cycle valves in reciprocating piston engines, consisting of a housing (G), a cam (N) mounted in a turning joint (ng) in the housing (G), and whose rotating motion is derived from a crankshaft,

an output element (A), which is mounted in a turning joint (ag) in the housing (G), and which transmits the motion to the charge-cycle valve (V), and an intermediate element (Z) that is mounted in a turning joint (zg) in the housing (G) and is connected with the cam (N) and the output element (A) through a cam joint (zn, za), wherein the cam joint (za) that sits between the intermediate element (Z) and the output element (A) comprises a section that forms a stop notch and a control section, and which is characterized in that the section of the cam joint (za) that forms a stop notch is formed by a curve (Kazr1) on the output element (A), which is a circular arc, whose center is identical to the center of rotation of the turning joint (zg), and further characterized in that the position of the cam joint (za) can be changed, wherein this change in the position of the cam joint (za) in the area of the valve stop notch reflects a shift (Vaz) along the section (Kazr1) of the contour of the output element (A).

8. Device according to claim 7, characterized in that the cam joint (za) between the intermediate element (Z) and the output element (A) is formed, on the intermediate element (Z), by a rotation body (RZ).

9. Device according to claims 6 to 8, characterized in that the cam joint (av) between the output element (A) and the valve (V) on its output element's side, is essentially formed by a circular arc (KbV), whose circle center lies on a straight line, and on which there also lies the rotation center of the turning joint (zg) between the intermediate element (Z) and the housing (G), and which runs essentially parallel to the motion of the valve.

10. Device according to claims 1 to 9, characterized in that the suction valve (VE) of a cylinder is actuated through a cam (NE), an intermediate element (ZE) and an output element (AE), and an exhaust valve (VA) is actuated through a cam (NA), an intermediate element (ZA), and an output element (AA), and that a cam (NE, NA) is mounted on a camshaft (WEA1).

11. Device according to claim 10, characterized in that the intermediate elements (ZE, ZA) actuate the suction and exhaust valves (VE, VA) of a cylinder by means of a single cam (NEA) of a camshaft (WEA1).

12. Device according to claims 1 to 11, characterized in that the cam joint (za) between the intermediate element (Z) and the output element (A) lies in the same plane in which the camshaft (W) stands vertically, and in which there also lies the cam joint (zn) that sits between the intermediate element (Z) and the cam (N).

13. Device according to claims 1 to 11, characterized in that the cam joint (za) does not lie in the same plane in which the camshaft (W1) stands vertically, and in which there also lies the cam joint (zn) that sits between the intermediate element (Z1) and the cam (N1).

14. Device according to claims 1 to 13, characterized in that the cam (N2) actuates a single intermediate element (Z2), which actuates, through one or more output element (A) (Ai), two or more valves (Vi) of a cylinder.

15. Device according to claims 1 to 14, characterized in that the intermediate element (Z) is pressed against the cam (N) of the camshaft (W) by a spring.

16. Device according to claims 1 to 15, characterized in that at least one more drive element (GG) is introduced into the system in order to transmit the motion of the cam (N3) of the camsfaht (W3) to the intermediate element (Z3).